

## PATENT ABSTRACTS OF JAPAN

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## (54) REFLECTIVE BODY

## (57)Abstract:

PROBLEM TO BE SOLVED: To obtain a reflective body which is lightweight and small in size, which has excellent productivity and which is suitable as a back light reflector in a liquid crystal display device by forming a metal thin film reflective laminated body having at least a metal reflection layer formed on a film surface so as to be integrated in a recess of a base body which does not transmit rays.

SOLUTION: The reflective body is obtd. by forming a metal thin film reflective laminated body having at least a metal thin film reflection layer (A) on the surface of a film (B) so as to be integrated in a recess of a base body (C) which does not transmit rays. As for the film (B), the material is not especially limited, and any film on which a metal thin film reflection layer (A) can be formed may be used as far as the film has good transmitting property for rays and flexibility in the case of forming into one body. For example, a polyester film produced from polybutylene terephthalate homopolymer or copolymers of these can be used. As for the metal thin film reflection layer (A), a thin film of a single metal such as silver, aluminum, nickel, chromium, tin or the like or an alloy of these can be used.

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CLAIMS

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[Claim(s)]

[Claim 1] The reflector characterized by really fabricating the metal thin film reflective layered product which formed the metal thin film reflecting layer (A) in the film (B) front face at least to the crevice of the base material (C) of beam-of-light nontransparent nature.

[Claim 2] The reflector according to claim 1 really fabricated so that it might be located in the crevice of a base material (C) in order of a base material (C), a metal thin film reflecting layer (A), and a film (B).

[Claim 3] The reflector according to claim 1 whose radius of curvature of a crevice is 5mm or less.

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the reflector which really [ excellent in productivity ] fabricated this reflective layered product really by the fabricating method to the crevice on the front face of a moldings of beam-of-light nontransparent nature used as a base material about a reflector using the reflective layered product which has the metal thin film reflecting layer formed on plastic film. The reflector by this invention is related with the reflector used suitable for the fluorescent lamp reflecting plate for back lights of the liquid crystal display panel used for a word processor, a notebook computer, etc.

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PRIOR ART

[Description of the Prior Art] Conventionally, the reflector using the reflective layered product which has a metal thin film reflecting layer on substrates, such as plastic film, is known well. These are excellent in flexibility, a light weight, and \*\*, are stuck on other independent or support plates etc., and are used for them. In the liquid crystal display which has come to be used abundantly, said reflector is used also as a back light reflector in recent years. The light source becomes small, therefore, as for this reflector, a thing 10mm or less is preferably used for radius of curvature also as a reflector. The reflector which inserted the reflective layered product which has a metal thin film reflecting layer on substrates, such as the aforementioned plastic film, in a base material of non-beam-of-light permeability like the reflector which carried out lamination bending of the reflective layered product which has a metal thin film reflecting layer, and had the curvature of 10mm or less on substrates, such as the aforementioned plastic film, as these reflectors at a base material of non-beam-of-light permeability like an aluminum plate, and the aluminum plate which carried out bending to the curvature of 10mm or less beforehand is proposed.

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EFFECT OF THE INVENTION

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[Effect of the Invention] This invention is the reflector which the base material which formed the crevice etc. beforehand, and really fabricated the metal thin film reflective layered product layered product, and without a shaping side's making adhesives intervene and making adhesives really intervene, it can finish beautiful and it can offer homogeneity and the reflector excellent in economical efficiency.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] A base material of non-beam-of-light permeability like the aluminum plate which carried out bending to the curvature of 10mm or less beforehand has many problems in the reflector which inserted the reflective layered product which has a metal thin film reflecting layer on substrates, such as the aforementioned plastic film, that it is easy to produce the gap at the time of insertion etc. In the reflector which carried out lamination bending of the reflective layered product which has a metal thin film reflecting layer, and had the curvature of 10mm or less on substrates, such as the aforementioned plastic film, at the base material, problems, such as a gap by the adhesive agent in the interface of a base material and the reflective layered product which has a metal thin film reflecting layer on substrates, such as plastic film, etc., and distortion of the reflector by adhesion peeling, arise at the time of bending. This invention solves the problem in said Prior art, and uses a reflector suitable as a back light reflector as an offer plug in a liquid crystal display.

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## MEANS

[Means for Solving the Problem] This invention is a reflector characterized by really fabricating the metal thin film reflective layered product which formed the metal thin film reflecting layer (A) in the film (B) front face at least to the crevice of the base material (C) of beam-of-light nontransparent nature, and is set to the crevice of a base material (C). It is the aforementioned reflector whose radius of curvature of a crevice it is the really fabricated aforementioned reflector as located in order of a base material (C), a metal thin film reflecting layer (A), and a film (B), and is 5mm or less further.

[0005]

[Embodiment of the Invention] As a concrete example, it sets to the crevice of a base material (C). A base material (C), a metal thin film reflecting layer (A), In this crevice of the reflector really fabricated so that it might be located in order of a film (B) A base material (C), A metal thin film reflecting layer (A), a film (B), and the reflector located in order of the light source are constituted, a liquid crystal display carries out the back light of the beam of light reflected mainly by the metal thin film reflecting layer (A) of this crevice, and the light of the light source uses it. As a film (B) of the metal thin film reflective layered product in the reflector of this invention which is the film (B) which formed the metal thin film reflecting layer (A) at least It is the film which can form not a thing but the metal thin film reflecting layer (A) limited especially. That what is necessary is just the thing which has good beam-of-light permeability and which really has the flexibility at the time of shaping For example, the film from the polyester of the homopolymers of polyethylene terephthalate, polyethylenenaphthalate, and polybutylene terephthalate, or these copolymerization polymers, The film of the homopolymer of polyolefines, such as polypropylene and polyethylene, or a copolymerization polymer, The film from what carries out addition content of the ultraviolet ray absorbent beforehand etc. is mentioned to the films of the homopolymer of polyacrylate or poly methacrylate, or a copolymerization polymer, and these polymers. The film from the copolymerized polyester which made the ultraviolet ray absorbent contain also in said film is more desirable from points, such as thermal resistance, flexibility, beam-of-light permeability, and ultraviolet-rays stability. 4 micrometers - 200 micrometers are suitable for the thickness of these films, and it is 4 micrometers - 50 micrometers more preferably, a problem increases in the thermal resistance at the time of forming a metal thin film reflecting layer (A) in the case of less than 4 micrometers, or handling, and in exceeding 200 micrometers on the other hand, a problem really increases in the flexibility at the time of shaping.

[0006] That metals, such as silver, aluminum, nickel, chromium, an indium, and tin, are independent as a metal thin film reflecting layer (A) of the reflective layered product which is the film (B) which formed the metal thin film reflecting layer (A) at least or the thin film of an alloy in the reflector of this invention can be used. As thickness of a metal thin film, 5 to about 200nm is desirable, and is 10nm to 150nm more preferably. These metal thin films may be used as an independent thin film layer, and may be the laminatings more than two-layer. Even if it is deficient in a reflex function when not fulfilling 5nm, and it surpasses 200nm, the increment in a reflex function is not accepted but becomes disadvantageous also in flexibility etc. Although especially limitation is not carried out, as for formation of a up to [ the film (B) of these metal thin film reflecting layers (A) ], it is desirable to form by the thin film formation approaches, such as vacuum evaporation technique, the sputtering method, and the ion plating method.

[0007] As a base material (C) of the beam-of-light nontransparent nature of this invention, these complex of the thermoplasticity made into beam-of-light nontransparent nature, such as resin, aluminum, steel, and copper, can be used. Although it is not limited, especially thickness has 0.1mm or more about 5 desirablenmm, when using a plate. The reflector process of this invention establishes a crevice in the whole surface of this thermoplastics etc. as that example, the reflective layered product which is the aforementioned film (B) which formed the metal thin film reflecting layer (A) at least is really fabricated to this crevice, pressing so that it may meet at a crevice inside, and the method of making a metal thin film reflecting layer (A) form in a crevice is mentioned.

[0008] The reflective layered product which is the film (B) of this invention which formed the metal thin film reflecting layer (A) at least What formed the metal thin film reflecting layer (A) on \*\* film (B) as the configuration, \*\* What prepared the protection resin layer on the film (B), and formed the metal thin film reflecting layer (A) on it, \*\* What prepared the protection resin layer on the film (B), formed the metal thin film reflecting layer (A) on it, and prepared the adhesives layer on this metal thin film reflecting layer (A) further, \*\* What formed the metal thin film reflecting layer (A) on the film (B), and prepared the adhesives layer on it, \*\* There are some which prepared the mold release layer on the film (B), prepared the protection resin layer on this mold release layer, formed the metal thin film reflecting layer (A) on it, and prepared the adhesives layer on this metal thin film reflecting layer (A) further, and it can be used, choosing suitably. There is especially no limit as a protection resin layer. For example, acrylic, an



urethane system, A silicon system, urethane-acrylic, a melamine system, a urea system, a urea-melamine system, Independent or the coating made to dissolve such mixture in the organic solvent or water used as the principal component for resin, such as a cellulose system and a benzoguanamine system, gravure, What applied, was made to dry by print processes, such as screen printing and offset printing, (thermosetting resin, ultraviolet-rays hardenability resin, electron ray hardenability resin, radiation-curing nature resin, etc. are hardened in the case of a hardenability paint film), and was formed is mentioned. As protection layer thickness, there is especially no limit and it is suitably adopted from the range of 0.5-10 micrometers. In the case of less than 0.5 micrometers, also when a protective effect is hard to be acquired and it exceeds 10 micrometers, the protective effect beyond it is not acquired, and it is not suitable from a cost side.

[0009] The mold release layer which can be used in this invention When exfoliating a film from mold goods, may be required. Then It is what forms a mold release layer in a film, and does not need to form a film when after shaping does not really exfoliate when a mold-release characteristic has a film base material. Formation of this mold release layer Acrylic resin, chlorination olefine resin, paraffin wax, and a synthetic wax are used, and it carries out by print processes, the roll coater methods, etc., such as gravure and screen printing, and is suitably adopted from the range of 0.5-10 micrometers as the thickness. In the case of less than 0.5 micrometers, also when the mold release effectiveness is hard to be acquired and it exceeds 10 micrometers, the mold release effectiveness beyond it is not acquired, and it is not suitable from a cost side. The two or more layers metal thin film reflecting layer of this invention may be prepared not only in one layer, and, as for each class, components may differ, respectively. For example, a silver metal vacuum evaporatio no layer monolayer, an indium metal vacuum evaporatio no layer monolayer, the laminating of an indium metal vacuum evaporatio no layer and a silver metal vacuum evaporatio no layer, etc. may carry out selection adoption suitably.

[0010] As resin used for the adhesives layer used if needed for this invention, there is especially no limit, is suitably chosen from the resin used for the usual imprint foil, and is used. For example, selection adoption is suitably carried out from independent or the organic solvent mold resin which uses such mixture as a principal component of resin, such as acrylic, a vinyl acetate system, a vinyl chloride system, a styrene-butadiene system, a vinyl chloride-vinyl acetate system, an ethylene-vinyl acetate system, a polyester system, a chlorinated-rubber system, a chlorination polypropylene system, and an urethane system, emulsion system resin, and water soluble resin. A glue line applies the coating liquid diluted with a solvent or water on a metal thin film reflecting layer (A) with gravure, screen printing, offset printing, etc., dries said resin, and is formed. As thickness of an adhesives layer, there is especially no limit and selection adoption is usually suitably carried out from the range of 0.3-20 micrometers. In the case of less than 0.3 micrometers, since it is difficult to acquire a firm adhesive property, it is not desirable. Moreover, when exceeding 20 micrometers, it is not desirable in respect of cost and workability.

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EXAMPLE

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[Example] An example is raised to below and this invention is explained to a detail.

\* Spreading formation of the acrylic resin solution (NV=25%) was carried out by GURABIYA coating at about 1 micron of desiccation thickness, and the mold release layer was prepared in the polyethylene terephthalate film with a \* example 1 thickness of 25 micrometers (micron). On this mold release layer, spreading formation of the acrylic urethane resin solution (NV=30%) was carried out by GURABIYA coating at about 3 micrometers of desiccation thickness, and the protective layer was prepared. On this protective layer, the metal thin film layer was formed so that it might become 50nm thickness by vacuum evaporation about silver, and the metal thin film layer was formed so that it might become 20nm thickness by vacuum evaporation about an indium on this silver layer further. The adhesives layer was formed for acrylic resin by 3-micron thickness by reverse coating on this metal thin film layer, and the metal thin film reflective layered product was obtained. The adhesives layer side was made to meet this crevice of the aluminum plate which has formed the crevice in the hemicycle for the obtained metal thin film reflective layered product with the curvature of 4mm beforehand, it really fabricated by heat press, the polyethylene terephthalate film was exfoliated, and the reflector was obtained.

[0012] \* On the polyethylene terephthalate film with a \* example 2 thickness of 12 micrometers (micron), the metal thin film layer was formed so that it might become 50nm thickness by the sputtering method about a silver-indium alloy (melting point of 280 degrees C). The adhesives layer was formed for acrylic resin by 2-micron thickness by reverse coating on this metal thin film layer, and the metal thin film reflective layered product was obtained. The adhesives layer side was made to meet this crevice of the plastics Plastic solid which has formed the crevice in the hemicycle for the obtained metal thin film reflective layered product with the curvature of 5mm beforehand, it really fabricated by heat press, and the reflector was obtained.

[0013] \* Spreading formation of the polyester resin solution was carried out so that it might become 1 micrometer of desiccation thickness by GURABIYA coating, on the polyethylene terephthalate film which scoured the ultraviolet ray absorbent with a \* example 3 thickness of 25 micrometers (micron), and was full, the protective layer was prepared, and the metal thin film layer was formed so that it might become 100nm thickness by vacuum evaporation about silver on this protective layer. On this metal thin film layer, spreading formation of the acrylic resin solution was carried out so that it might become 1 micrometer of desiccation thickness by GURABIYA coating, and the 2nd protective layer was formed. The adhesives layer was formed and the metal thin film reflective layered product was obtained so that it might furthermore become 3 micrometers of desiccation thickness by reverse coating about a polyvinyl-acetate-resin solution on this 2nd protective layer. The polyethylene terephthalate film side of the obtained metal thin film reflective layered product was made to meet the mold heights of plastics injection-molding equipment, plastics was extruded, injection molding was really carried out, and the reflector formed in plastics heights in order of a plastics layer, an adhesives layer, the 2nd protective layer, the metal thin film layer, the protective layer, and the polyethylene terephthalate film was obtained. Each reflector of examples 1, 2, and 3 was what really with the reflexivity which was excellent as a back light reflector in a liquid crystal display has a uniform shaping side in a shaping side.

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最終頁に続く

(54) 【発明の名称】 反射体

(57) 【要約】

【課題】 光線非透過性の支持体としての成形物表面の凹部に該反射積層体を生産性に優れた一体成形法により一体成形した軽量小型の反射体を提供する。

【解決手段】 少なくとも金属薄膜反射層 (A) を形成したフィルム (B) を、光線非透過性の基材 (C) の凹部に熱押圧などの手段によって一体成形したことを特徴とする反射体

【特許請求の範囲】

【請求項1】 フィルム（B）表面に、少なくとも金属薄膜反射層（A）を形成した金属薄膜反射積層体を、光線非透過性の基材（C）の凹部に一体成形したことを特徴とする反射体。

【請求項2】 基材（C）の凹部において、基材（C）、金属薄膜反射層（A）、フィルム（B）の順に位置するように一体成形された請求項1記載の反射体。

【請求項3】 凹部の曲率半径が5mm以下である請求項1記載の反射体。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】 本発明は、反射体に関するものであり、プラスチックフィルム上に形成した金属薄膜反射層を有する反射積層体を用いて、基材となる光線非透過性の成形物表面の凹部に該反射積層体を生産性に優れた一体成形法により一体成形した反射体に関する。本発明による反射体は、ワードプロセッサやノートパソコン等に使用される液晶表示パネルのバックライト用蛍光灯反射板に好適に使用される反射体に関する。

【0002】

【従来の技術】 従来、プラスチックフィルム等の基板上に金属薄膜反射層を有する反射積層体を用いた反射体はよく知られている。これらは可撓性、軽量、等に優れ、単独でまたは他の支持板等に貼り合わせて使用される。近年多用されるようになってきた液晶表示装置においてバックライト反射体としても前記反射体が使用される。この反射体は光源が小さくなり、従って反射体としても曲率半径が10mm以下のものが好ましく使用される。これらの反射体として、アルミ板のような非光線透過性の支持体に前記のプラスチックフィルム等の基板上に金属薄膜反射層を有する反射積層体を貼り合わせ曲げ加工して10mm以下の曲率をもった反射体、あらかじめ曲率10mm以下に曲げ加工したアルミ板のような非光線透過性の支持体に前記のプラスチックフィルム等の基板上に金属薄膜反射層を有する反射積層体を挿入した反射体、等が提案されている。

【0003】

【発明が解決しようとする課題】 あらかじめ曲率10mm以下に曲げ加工したアルミ板のような非光線透過性の支持体に前記のプラスチックフィルム等の基板上に金属薄膜反射層を有する反射積層体を挿入した反射体においては、挿入時のずれや等が生じやすく問題が多い。支持体に前記のプラスチックフィルム等の基板上に金属薄膜反射層を有する反射積層体を貼り合わせ曲げ加工して10mm以下の曲率をもった反射体においては、曲げ加工時に支持体とプラスチックフィルム等の基板上に金属薄膜反射層を有する反射積層体との界面での接着不良等によるずれや、接着剥がれによる反射体の歪み等の問題が生じる。本発明は、前記従来の技術における問題を解決

し、液晶表示装置においてバックライト反射体として好適な反射体を提供せんとするものである。

【0004】

【課題を解決するための手段】 本発明は、フィルム（B）表面に、少なくとも金属薄膜反射層（A）を形成した金属薄膜反射積層体を、光線非透過性の基材（C）の凹部に一体成形したことを特徴とする反射体であり、基材（C）の凹部において、基材（C）、金属薄膜反射層（A）、フィルム（B）の順に位置するように一体成形された前記の反射体であり、さらに凹部の曲率半径が5mm以下である前記の反射体である。

【0005】

【発明の実施態様】 具体的な例として、基材（C）の凹部において、基材（C）、金属薄膜反射層（A）、フィルム（B）の順に位置するように一体成形された反射体の、該凹部において基材（C）、金属薄膜反射層（A）、フィルム（B）、光源の順に位置する反射体が構成され、光源の光が主として該凹部の金属薄膜反射層（A）で反射された光線を液晶表示装置のバックライトとして利用する。本発明の反射体における、少なくとも金属薄膜反射層（A）を形成したフィルム（B）である金属薄膜反射積層体の、フィルム（B）としては、特に限定されるものではなく金属薄膜反射層（A）を形成するフィルムであって、光線透過性のよい、一体成形時の可撓性を有するものであればよく、例えばポリエチレンテレフタレート、ポリエチレンナフタレート、ポリブチレンテレフタレートのホモポリマーやこれらの共重合ポリマーのポリエステルからのフィルム、ポリプロピレン、ポリエチレンなどのポリオレフィンのホモポリマーや共重合ポリマーのフィルム、ポリアクリレートやポリメタアクリレートのホモポリマーや共重合ポリマーのフィルム、これらのポリマーにあらかじめ紫外線吸収剤を添加含有せしめたものからのフィルムなどが挙げられる。前記フィルムの中でも紫外線吸収剤を含有せしめた共重合ポリエステルからのフィルムが耐熱性、可撓性、光線透過性、紫外線安定性等の点からより好ましい。これらのフィルムの厚みは4 $\mu$ m～200 $\mu$ mが適当であり、より好ましくは4 $\mu$ m～50 $\mu$ mであり、4 $\mu$ m未満の場合金属薄膜反射層（A）を形成する際の耐熱性や取扱いに問題が多くなり、一方200 $\mu$ mを超える場合には一体成形時の可撓性に問題が多くなる。

【0006】 本発明の反射体における、少なくとも金属薄膜反射層（A）を形成したフィルム（B）である反射積層体の金属薄膜反射層（A）としては、銀、アルミニウム、ニッケル、クロム、インジウム、錫、等の金属の単独または合金の薄膜が使用できる。金属薄膜の厚さとしては5nmから200nm程度が好ましく、より好ましくは10nmから150nmである。これらの金属薄膜は単独の薄膜層として使用してもよく、また2層以上の積層であってもよい。5nmに満たないときは反射機

能に乏しく、200nmをこえても反射機能の増加は認められず、可撓性等においても不利となる。これらの金属薄膜反射層(A)のフィルム(B)上への形成は、特に限定はされないが、真空蒸着法、スパッタリング法、イオンプレーティング法など薄膜形成方法により形成することが好ましい。

【0007】本発明の光線非透過性の基材(C)としては、光線非透過性とした熱可塑性の樹脂、アルミニウム、スチール、銅等およびこれらの複合体が使用できる。厚さは特に限定されないが、板状体を使用するとき0.1mm以上5mm程度が好ましいものである。本発明の反射体製法は、その一例としては、この熱可塑性樹脂等の一面に凹部を設け、この凹部に、前記の少なくとも金属薄膜反射層(A)を形成したフィルム(B)である反射積層体を凹部内面に沿うように押圧しながら一体成形して、凹部に金属薄膜反射層(A)を形成せしめる方法が挙げられる。

【0008】本発明の少なくとも金属薄膜反射層(A)を形成したフィルム(B)である反射積層体は、その構成として①フィルム(B)上に金属薄膜反射層(A)を形成したもの、②フィルム(B)上に保護樹脂層を設けその上に金属薄膜反射層(A)を形成したもの、③フィルム(B)上に保護樹脂層を設けその上に金属薄膜反射層(A)を形成しさらにこの金属薄膜反射層(A)上に接着剤層を設けたもの、④フィルム(B)上に金属薄膜反射層(A)を形成しその上に接着剤層を設けたもの、⑤フィルム(B)上に離型層を設け、該離型層上に保護樹脂層を設けその上に金属薄膜反射層(A)を形成しさらにこの金属薄膜反射層(A)上に接着剤層を設けたもの、等があり適宜選択して使用することができる。保護樹脂層としては特に制限はなく、例えば、アクリル系、ウレタン系、シリコン系、ウレタン-アクリル系、メラミン系、尿素系、尿素-メラミン系、セルロース系、ペンゾグアナミン系などの樹脂を単独またはこれらの混合物を主成分とした有機溶剤もしくは水に溶解させた塗料をグラビア印刷法、スクリーン印刷法、オフセット印刷法などの印刷法で塗布、乾燥(熱硬化性樹脂、紫外線硬化性樹脂、電子線硬化性樹脂、放射線硬化性樹脂など硬化性塗膜の場合には硬化)させて形成したものが挙げられる。保護層の厚さとしては特に制限はなく、0.5~10 $\mu$ mの範囲から適宜採用される。0.5 $\mu$ m未満の場合、保護効果が得られにくく、また10 $\mu$ mを超える場合にもそれ以上の保護効果が得られず、コスト面からも適当でない。

【0009】本発明において用いることのできる離型層は、フィルムを成形品から剥離する場合には必要な場合があり、その時には、フィルムに離型層を形成するものであり、フィルム基材が離型性がある場合またはフィルムを一体成形後も剥離しない時には形成しなくてもよいものであり、該離型層の形成は、アクリル系樹脂、塩素

化オレフィン樹脂、パラフィンワックス、合成ワックスを使用して、グラビア印刷法、スクリーン印刷法等印刷法やロールコーター法等で実施され、その厚さとしては0.5~10 $\mu$ mの範囲から適宜採用される。0.5 $\mu$ m未満の場合、離型効果が得られにくく、また10 $\mu$ mを超える場合にもそれ以上の離型効果が得られず、コスト面からも適当でない。本発明の金属薄膜反射層は1層に限らず、複数層設けてもよく、各層はそれぞれ成分が異なってもよい。例えば、銀金属蒸着層単層や、インジウム金属蒸着層単層や、インジウム金属蒸着層と銀金属蒸着層の積層等、適宜選択採用してもよい。

【0010】本発明の必要に応じて用いられる接着剤層に用いる樹脂としては特に制限はなく、通常の転写箔に用いられる樹脂から適宜選択し用いられる。例えば、アクリル系、酢酸ビニル系、塩化ビニル系、スチレン-ブタジエン系、塩化ビニル-酢酸ビニル系、エチレン-酢酸ビニル系、ポリエステル系、塩化ゴム系、塩素化ポリプロピレン系、ウレタン系などの樹脂の単独またはこれらの混合物を主成分とする有機溶剤型樹脂、エマルジョン系樹脂、水溶性樹脂から適宜選択採用される。接着剤層は、前記樹脂を溶剤もしくは水で希釈された塗液をグラビア印刷法、スクリーン印刷法、オフセット印刷法などで金属薄膜反射層(A)上に塗布、乾燥させて形成される。接着剤層の厚さとしては特に制限はなく、通常0.3~20 $\mu$ mの範囲から適宜選択採用される。0.3 $\mu$ m未満の場合、強固な接着性を得ることが困難なため好ましくない。また20 $\mu$ mを超える場合コスト面、加工性面で好ましくない。

#### 【0011】

【実施例】以下に実施例をあげて本発明を詳細に説明する。

##### \*\*実施例1

厚さ25 $\mu$ m(ミクロン)のポリエチレンテレフタレートフィルムに、アクリル樹脂溶液(NV=25%)をグラビアコーティングにより乾燥膜厚約1ミクロンに塗布形成して離型層を設けた。該離型層上にアクリルウレタン樹脂溶液(NV=30%)をグラビアコーティングにより乾燥膜厚約3 $\mu$ mに塗布形成して保護層を設けた。該保護層上に、銀を蒸着によって50nmの膜厚になるように金属薄膜層を形成し、さらに該銀層上にインジウムを蒸着によって20nmの膜厚になるように金属薄膜層を形成した。該金属薄膜層上にアクリル樹脂をリバーコーティングにより接着剤層を3ミクロン厚で形成し金属薄膜反射積層体を得た。得られた金属薄膜反射積層体を、あらかじめ4mmの曲率で半円形に凹部を形成してあるアルミ板の、該凹部に接着剤層部側を沿わせ熱押圧により一体成形し、ポリエチレンテレフタレートフィルムを剥離して反射体を得た。

##### 【0012】\*\*実施例2

厚さ12 $\mu$ m(ミクロン)のポリエチレンテレフタレー

トフィルム上に、銀-インジウム合金（融点280℃）をスパッタリング法によって50nmの膜厚になるように金属薄膜層を形成した。該金属薄膜層上にアクリル樹脂をリバースコーティングにより接着剤層を2ミクロン厚で形成し金属薄膜反射積層体を得た。得られた金属薄膜反射積層体を、あらかじめ5mmの曲率で半円形に凹部を形成してあるプラスチック成形体の、該凹部に接着剤層部側を沿わせ熱押圧により一体成形して反射体を得た。

#### 【0013】\*\*実施例3

厚さ25μm（ミクロン）の紫外線吸収剤を練りこんだポリエチレンテレフタレートフィルム上に、ポリエステル樹脂溶液をグラビアコーティングにより乾燥膜厚1μmになるように塗布形成し保護層を設け、該保護層上に銀を蒸着により100nmの膜厚になるように金属薄膜層を形成した。該金属薄膜層上にアクリル樹脂溶液をグラビアコーティングにより乾燥膜厚1μmになるように塗布形成し第2保護層を形成した。さらにこの第2保護層上に酢酸ビニル樹脂溶液をリバースコーティングに

より乾燥膜厚3μmになるように接着剤層を形成し金属薄膜反射積層体を得た。得られた金属薄膜反射積層体のポリエチレンテレフタレートフィルム側を、プラスチック射出成形装置の型凸部に沿わせ、プラスチックを押し出して一体射出成形して、プラスチック凸部に、プラスチック層、接着剤層、第2保護層、金属薄膜層、保護層、ポリエチレンテレフタレートフィルムの順に形成された、反射体を得た。実施例1、2および3の反射体はいずれも、液晶表示装置におけるバックライト反射体として優れた反射性を有した一体成形面において均一な成形面を有するものであった。

#### 【0014】

【発明の効果】本発明は金属薄膜反射積層体積層体をあらかじめ凹部等を形成した支持体と一体成形した反射体であり、一体成形面が接着剤を介在せしめたり、また接着剤を介在せしめることもなく均一、美麗に仕上げる事ができ、経済性に優れた反射体を提供しうるものである。

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